

Christine Joyce

12/18/06

(2)

From: Doug Halley
Sent: Friday, December 15, 2006 4:25 PM
To: Christine Joyce
Cc: Don Johnson; John Murray
Subject: FW: AWRAC Recommendation



letter transmitting Adams St. WWTF
scope and ... Scope and Fee.p...

Don asked me to forward this to you for the agenda.

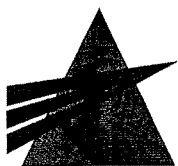
-----Original Message-----

From: Doug Halley
Sent: Thursday, December 14, 2006 8:37 AM
To: Don Johnson
Cc: John Murray
Subject: AWRAC Recommendation

The AWRAC voted last night to recommend to the Selectmen that Task 2 as specified in Woodard & Curran's letter of December 13th and further defined in their proposal of November 27th be done prior to Annual Town Meeting (see attached). The AWRAC further voted to recommend to the Selectmen that a holding article also be placed for Annual Town Meeting which would address further project recommendations the AWRAC will specify in their forthcoming meetings.

Task 2 as proposed by Woodard & Curran would cost \$21,500. Selectmen Magee has requested that advice be sought from Town Counsel regarding expenditures for this task in relationship to the requirements of the Sewer Assessment Bylaw and based on that recommendation identifying possible sources available to fund this task.

The additional projects that AWRAC is considering for a recommendation of inclusion for Town Meeting have a projected cost of \$73,500. I would be happy to meet with you to go over more fully the recommendations of the AWRAC.



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December 13, 2006

Brent Reagor, RS, Sanitarian
Town of Acton
Board of Health
472 Main Street
Acton, MA 01720

RE: Breakdown of Fee Budget
Capacity Assessment and Optimization Study Proposal

Dear Mr. Reagor;

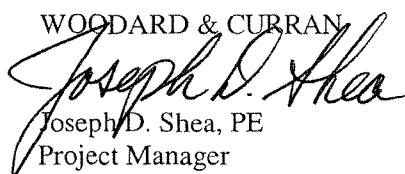
As requested, Woodard & Curran has prepared a breakdown of the fee budget for the scope of work related to the Capacity Assessment and Optimization Study Proposal. The project is scoped as a single effort, therefore being most efficient when tasks are done concurrently; the individual fees are difficult to hold if the Town wants to separate the pieces, for example: a single meeting will cover all three items versus three separate meetings. Please advise if you need any further breakdown. The fee budget from our November 27, 2006 proposal is as follows:

1. Evaluation - Adams Street Wastewater Treatment Facility	\$ 13,200
2. Evaluation - Adams Street Rapid Infiltration Basins	\$ 25,100
3. Evaluation - Collection System and Pumping Stations	<u>\$ 4,200</u>
Fixed Price Total	\$ 42,500

If you have any question, please feel free to contact me.

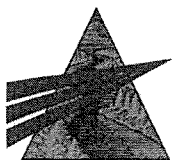
Sincerely

WOODARD & CURRAN


Joseph D. Shea, PE
Project Manager

JDS/ljs
Project 212727

Cc: Doug Halley, Town of Acton
Helen Gordon, W&C
Bob Rafferty, W&C



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November 27, 2006

Mr. Brent Reagor
Department of Health
Town of Acton
472 Main Street
Acton, MA 01720

Re: Adams Street WWTF, Collection System and RIB Capacity Assessment
Scope of Services and Fee Budget

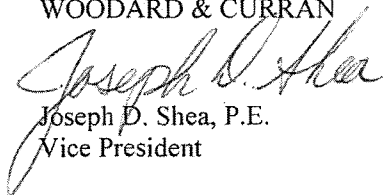
Dear Mr. Reagor:

Thank you for the opportunity to outline a recommended scope and fee budget for potential work in relationship to an assessment of the optimal capacity in the existing Acton wastewater infrastructure and to outline a path forward to address capacity or loading limitations (i.e. "bottlenecks") in the system.

Based upon our historic experience with the system and our daily understanding of its operation since start-up in February 2002, we have crafted a scope that leverages the wealth of information we have already compiled for Acton. In addition, our history with the Massachusetts Department of Environmental Protection on groundwater discharge issues in Acton and other communities has formed the basis of our scope regarding hydrogeological guidelines and regulator expectations when increasing loading to existing Rapid Infiltration Basins.

We are excited about the potential to continue with our working relationship with the Town. The Acton projects have been some of our most outstanding over the last few years and we know we can continue to help the Town succeed in achieving your goals. We are happy to discuss this scope and fee budget with you further and can be available for a meeting or a conference call at your convenience. As always, contact any of our staff if you have any questions.

Sincerely,
WOODARD & CURRAN

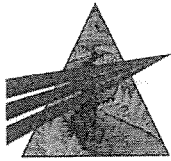


Joseph D. Shea, P.E.
Vice President

HTG/JDS/smd
Project Number: 212727

Enclosure(s)

cc: Doug Halley, Director of Health, Acton
Helen Gordon, Woodard & Curran
Eric Carlson, Woodard & Curran
Bill Luksha, Woodard & Curran
Paul Dombrowski, Woodard & Curran



Project Approach
Capacity Assessment & Optimization Study
Adams Street WWTF, Collection System and Rapid Infiltration Basins
Town of Acton, Massachusetts

1.0 Scope of Services

The Scope of the Project is to confirm the current capacity of the existing sewer infrastructure in Acton and to prepare recommendations on how to optimize and expand that capacity in the future by addressing flow or loading limitations (i.e. “bottlenecks”) in the system. For simplicity the Scope of Services has been separated into three sections as follows:

1. Evaluation of the Adams Street Wastewater Treatment Facility (WWTF)
2. Evaluation of the Adams Street Rapid Infiltration Basins (RIBs)
3. Evaluation of the collection system and pumping stations.

This scope has been created as an “open” approach to ensure close interaction between the Town staff, appointed Town committee members, regulators and other ‘stakeholders’. Because of recommendation for an open approach, it is difficult to forecast a complete project scope which includes the desires of all stakeholders, therefore we have listed our recommended tasks and assumptions in detail. These tasks and assumptions form the basis for the fee budget and schedule.

1.1. Evaluation of the Adams Street WWTF

Woodard & Curran will perform the following tasks to confirm the current capacity of the existing WWTF and to prepare recommendations on how to expand that capacity in the future:

1.1.1. Project Kick Off Meeting – W&C will hold a project kick off meeting at the WWTF with the Town and appropriate stakeholders to ensure we understand the desires, expectations, and concerns with respect to the capacity evaluation of the wastewater treatment facility. This Kick-off meeting will cover all three sections of work and will review milestones and critical decisions.

1.1.2. Data and Information Gathering – W&C will use collect operational data and coordinate our engineers and operators to ensure a thorough transfer of necessary information, we will review previous project files to retrieve WWTF design information, shop drawings, O&M manuals, and other information pertinent to the capacity evaluation. It will be critical that the basis of the evaluation is the WWTF as it operates *today*. Since the facility has evolved from Preliminary Design in 1997 through construction ending in 2001, start-up in early 2002 and a groundwater permit renewal in 2004, all of this information is important but *the body of work* formulates the basis for this evaluation. Data and information gathering will also occur for the RIBS and Pumping Stations.

1.1.3. Perform Flow and Loading Balance – W&C will perform a flow and loading balance model for the facility to establish the current flows and loads to the facility, and to determine actual peaking factors for the facility.



1.1.4. Evaluate Hydraulic Capacity – Based on the information gathered in Task 1.1.2, W&C will evaluate the average and peak hydraulic capacity for the following unit processes:

- A. Headworks (Influent Pumps, Screening and Grit Removal)
- B. Sequencing Batch Reactors
- C. Post-Equalization system
- D. Cloth Media Filters
- E. UV Disinfection
- F. Effluent Pumping System

We will also evaluate the peak hydraulic capacity of the piping systems and open channels that connect the unit processes to complete the hydraulic flow train of the WWTF. We will determine the peak hydraulic capacity of the overall facility based on the unit process and/or pumping/piping system that allows the lowest peak flowrate. We will determine the average hydraulic capacity of the overall facility based on the unit process that allows the lowest average flowrate while maintaining treatment efficiency.

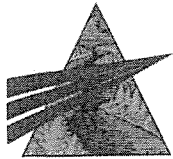
1.1.5. Evaluate Organic and Nutrient Removal Capacity – Based on the data gathered in Task 1.1.2., W&C will evaluate the biological treatment system and chemical feed systems to determine the average and maximum day treatment capacity for BOD₅, TSS, nitrogen, and phosphorus. This evaluation will include evaluation of the Sequencing Batch Reactors including the aeration system, Cloth Media Filters, and chemical feed/storage facilities.

1.1.6. Evaluate Solids Removal Capacity – Based on the information gathered in Task 1.1.2., W&C will evaluate the solids handling system to determine the average day, maximum week, and max month solids removal capacity. This task will include evaluation of the following:

- A. WAS Transfer Pumps
- B. WAS Storage Tank
- C. Sludge Feed Pumps
- D. Gravity Belt Thickener
- E. Thickened Sludge Storage Tank
- F. Thickened Sludge Feed Pump

1.1.7. Determine Overall Treatment Plant Capacity – Based on the information developed in the above listed Tasks, W&C will determine the overall treatment plant capacity in terms of influent flow, BOD₅ loading, TSS loading, nitrogen loading, and phosphorus loading and outline conceptual recommendations on how to expand capacity in the future by addressing the flow and loading limitations (i.e. “bottlenecks”) in the individual components.

1.1.8. Report – W&C will prepare a report describing the work completed, our findings, and conceptual recommendations on how to expand capacity in the future.



1.2. Evaluation of the Adams Street RIBs

Woodard & Curran will perform the following tasks to confirm the current capacity of the existing RIBs, as approved by the MADEP in the last Groundwater Discharge Permit renewal cycle. Our approach is based on proactively reaching consensus with the reviewing authorities at MADEP on critical aspects of the evaluation before proceeding with any detailed modeling work, codifying the consensus in writing, then proceeding with the detailed tasks. In our experience this process ultimately results the elimination of costs and schedule slippage associated with re-work and makes all stakeholders a timely part of the process. Consensus regarding "requirements" for hydrogeological analysis of increased loading, as well as what conclusions can already be drawn from the 5+ years of actual site groundwater data and slope monitoring will make the modeling effort more effective.

Woodard & Curran will perform the following tasks to prepare recommendations on available capacity within the existing RIB system

1.2.1 DEP Technical Review Meeting – Assuming that the technical details of the groundwater model will not be specifically covered in the overall Kick-off meeting, W&C will hold a technical Review meeting the appropriate DEP staff to review the below listed approach.

1.2.2 Updated Groundwater Model – W&C will conduct a ground water modeling effort to evaluate the RIB site for its capability for accepting additional volume of treated wastewater. The system has a current regulatory limit of 299,000 gallons per day with current loading significantly less than this limit. The WWTF capacity tasks result in a determination of the maximum capacity available in the system. This number will be utilized as the proposed RIBs loading for the future. We will evaluate the feasibility of the existing system to handle the higher flows using the site ground water model. We will perform the following steps:

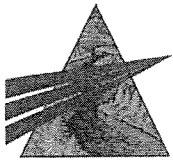
- A. Model Testing,
- B. Model Recalibration, and
- C. Model Simulations

A. Model Testing

The calibrated model will be benchmarked against data that has been collected over the past five years of operation including water levels in site wells, emergent ground water observations, recharge conditions, and effluent volumes discharged to the RIBs. Under this task, a W&C hydrogeologist will conduct post-audit simulations to see how closely the model simulations match real-world observations. This step may provide new insights into the way the RIB system responds to changes in effluent flow and ambient groundwater conditions. This step will help to determine the degree to which model recalibration is necessary.

B. Model Recalibration

The ground water model will be recalibrated to existing conditions at the site based on historical operational observations. The model parameters will be adjusted to improve the statistical match between observations and simulated values based on the operational data collected on the site. This will increase confidence in the reliability of model predictions to be completed in the Model Simulations.



C. Model Simulations

The recalibrated model will be used to achieve a higher level of confidence in simulations of additional wastewater discharge to the RIBs and the effect on emergent ground water conditions at these higher simulated flow rates. Simulations will be completed under various stresses (i.e. droughts, high water table conditions, etc.) to evaluate the upper limit of potential discharge to the RIBs. W&C will evaluate the emergent ground water conditions during these simulations along the RIB slopes and will document these simulations. In addition, W&C will evaluate the effect of increased discharges on the Zone II of the town's well-field. These simulations will form the basis for the recommendations for potential increases to wastewater discharge to the RIBs.

1.2.3 Model Report – W&C will prepare a Final Modeling Report to document the modeling efforts and to create a baseline for future discussions regarding the RIBs. The model updates will be discussed and the various changes to model parameters will be summarized. The model simulations will be documented and recommendations based on those simulations will be made. Figures and tables will be provided that help to illustrate the feasibility of possible system expansion. Discussion will include recommendations on interim incremental increases until ultimate capacity has been achieved, possible modifications to the groundwater and surface water monitoring program, modification to the approach used in the slope stability evaluations, and any other impacts such as the Assabet Well Zone II

1.3. Evaluation of the collection system and pumping stations

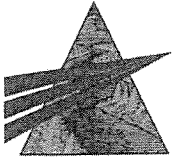
Woodard & Curran will perform the following tasks to confirm the current capacity of the existing collection system and pumping stations and to prepare recommendations on how to expand that capacity in the future:

1.3.1. Sewer Pipe Capacity Evaluation – W&C will review the sewer installation record information to prepare a figure showing the piping section in each pumping station tributary with the smallest hydraulic capacity. Actual slopes and pipe diameters will form the basis of this evaluation and open channel flow calculations will be applied to each.

1.3.2. Pumping Station Drawdown Tests – W&C will performed a timed drawdown test to chart the actual capacity of each pump and both pumps operating at once. This effort will be performed as part of the routine emptying of each station under the existing Contract Operations Agreement. The information will them be graphed on the certified pump curves for each pump obtained during construction.

1.3.3. Pumping Station Capacity – W&C will review the theoretical capacity for each of the 10 pumping stations based upon the original design documents. These capacities will be compared to the actual capacities determined in Task 1.3.2. Available capacities will then be justified and actual average daily and peak daily flows will be discussed.

1.3.4. Report – W&C will prepare a report describing the work completed, our findings, and conceptual recommendations on how to expand pumping station capacity in the future.



1.4. Project Execution

During the completion of the above listed tasks, W&C will also perform the following ongoing tasks:

1.4.1. Project Review Meetings – W&C will meet with the Town and stakeholders 3 times after the Kick-off Meeting to review the project status and to gather comments for consideration. At a minimum, we anticipate meeting at the completion of the draft reports.

1.4.2. Weekly Project Reports – W&C will develop a project status report on a weekly basis and share it with the Town's team via email. These reports will describe the progress made during the previous week and tasks anticipated for the coming week. They will also describe any issues identified in completing the tasks on schedule and identify suggested solutions to those issues. A budget update will also be included monthly to give the team the information necessary to assess our compliance with the schedule and budget for the project.

2.0 Fee Budget

The estimated fee budget to complete this scope of work is a fixed price \$42,500. Monthly invoices will be submitted to the Town on a milestone basis. Final invoice will be paid upon approval of final deliverable by the Town.

3.0 Schedule

It is anticipated that the assessment of the capacity of the WWTF and the collection system would take approximately six (6) weeks and the modeling portion of the project would take approximately four (4) additional weeks to complete. Allowing time to schedule a Kick-off Meeting yields an expected overall project schedule of twelve (12) weeks to complete from the signed notice to proceed. This schedule assume meeting with Stakeholders, including MADEP Staff, and be coordinated in less than two (2) weeks.
